

SHEET 1 OF 9

INFORMATION DISCLOSURE CITATION PTO-1449		ATTY. DOCKET NO. 14912.786		SERIAL NO. 10/053,138			
		APPLICANT Stephen E. Savas					
		FILING DATE 01/18/2002		GROUP 1763			
U.S. PATENT DOCUMENTS							
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE	
pt	5,571,366	11/1996	Ishii et al.	156	345		
pt	5,647,913	07/1992	Blalock	118	723I		
pt	5,558,722	09/1996	Okumura et al.	118	723I		
pt	5,556,521	09/1996	Ghanbari	204	192.37		
pt	5,449,432	09/1995	Hanaw	156	643.1		
pt	5,696,428	12/1997	Pasch	315	111.21		
pt	5,690,781	11/1997	Yoshida et al.	156	345		
pt	5,401,350	03/1995	Patrick et al.	156	345		
pt	6,068,784	05/2000	Collins et al.	118	723I		
FOREIGN PATENT DOCUMENTS							
EXAMINER'S INITIALS	PATENT NO.	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
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pt	2 105 729 A	30.03.83	Great Britain	C08 J7/00	C08F 2/52	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
pt	408288272	11/1996	Japan	C23C	16/50	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
pt	0154482A2	11/1985	Europe	C23C	16/00	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
pt	2240114A	07/1991	Great Britain	C23C	16/26	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
pt	R.W. Boswell et al., "Pulsed high rate plasma etching with variable Si/SiO ₂ selectivity and variable Si etch profiles," Appl. Phys. Lett. 47 (10), 15 Nov. 1985, pp. 1095-1097						
pt	J. Pope et al., "A Highly Selective Nitride to Oxide Etch to Reduce Single Bit Failures on Memory Products," Electrochemical Society Proceedings, Vol. 93-21, 1993, pp. 168-234						
pt	PCT International Search Report dated 07 MAR 1997 of corresponding PCT Application No. PCT/US96/16138, references cited above.						
EXAMINER P. Harrison			DATE CONSIDERED 5-25-03				

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U.S. PATENT DOCUMENTS							
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE	
pk	5,811,022	09/22/1998	Savas et al.	216	68	11/15/1994	
pk	5,534,231	07/09/1996	Savas	216	67	01/17/1995	
pk	5,419,805	05/30/1995	Jolly	156	643.1	02/18/1994	
pk	5,399,237	03/21/1995	Keswick et al.	156	643	01/27/1994	
pk	5,362,358	11/08/1994	Yamagata et al.	156	643	05/14/1993	
pk	5,354,417	10/11/1994	Cheung et al.	156	643	10/13/1993	
pk	5,354,381	10/11/1994	Sheng	118	723	05/07/1993	
pk	5,344,792	09/06/1994	Sandhu et al.	437	200	03/04/1993	
pk	5,332,441	07/26/1994	Barnes et al.	118	723	10/31/1991	
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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
pk	T.H. Ahn et al., "Negative ion measurements and etching in a pulsed-power inductively coupled plasma in chlorine," Plasma Sources Sci. Technol. 5, p. 139 (1996).						
pk	C. Charles et al., "Breakdown, steady-state, and decay regimes in pulsed oxygen helicon diffusion plasmas," J. Appl. Phys. 78, p. 766 (1995).						
pk	C. Charles et al., "SiO ₂ deposition from oxygen/silane pulsed helicon diffusion plasma," Apply. Phys. Lett. 67, p. 40 (1995).						
EXAMINER <i>p. Hasanzadeh</i>			DATE CONSIDERED <i>5-25-03</i>				

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pk	5,318,668	06/07/1994	Tamaki et al.	156	662	10/20/1992	
pk	5,318,664	06/07/1994	Saia et al.	156	643	11/14/1991	
pk	5,312,518	05/17/1994	Kadomura	156	662	05/29/1992	
pk	5,310,452	05/10/1994	Doki et al.	156	643	07/20/1992	
pk	5,289,010	02/22/1994	Shohet	250	492.21	12/08/1992	
pk	5,286,344	02/15/1994	Blalock et al.	156	657	06/15/1992	
pk	5,286,297	02/15/1994	Moslehi et al.	118	723 E	06/24/1992	
pk	5,284,549	02/08/1994	Barnes et al.	156	662	01/02/1992	
pk	5,259,924	11/09/1993	Mathews et al.	156	653	04/08/1992	
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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
pk	X. Chen et al., "Pulse plasma polymerization of tetramethyltin: Nanoscale compositional control of film chemistry," Chem. Mater. 8, p. 1067 (1996).						
pk	K. Hashimoto et al., "Reduction of the charging damage from electron shading," 1996 1st International Symposium on Plasma Process-Induced Damage, Santa Clara, CA, May 13-14 (1996).						
pk	M.A. Lieberman et al., "Global models of pulse-power-modulated high density, low pressure discharges," Plasma Sources Sci. Technol. 5, p. 145 (1996).						
EXAMINER <i>pk Hassanzadeh</i>			DATE CONSIDERED <i>5-25-03</i>				

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U.S. PATENT DOCUMENTS							
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE	
pt	5,242,538	09/07/1993	Hamrah et al.	156	643	01/29/1992	
pt	5,234,529	08/10/1993	Johnson	156	345	10/10/1991	
pt	5,231,057	07/27/1993	Doki et al.	437	225	08/20/1991	
pt	5,227,331	07/13/1993	Westmoreland	437	174	02/10/1992	
pt	5,219,485	06/15/1993	Wang et al.	252	79.3	10/17/1991	
pt	5,217,567	06/08/1993	Cote et al.	156	643	02/27/1992	
pt	5,201,994	04/13/1993	Nonaka et al.	156	643	11/17/1989	
pt	5,188,704	02/23/1993	Babie et al.	156	643	05/09/1991	
pt	5,160,408	11/03/1992	Long	156	656	04/27/1990	
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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
pt	Y. Lin et al., "Negative and positive ions from CF ₄ /O ₂ RF discharges in etching Si," Appl. Phys. Lett. 62, p. 675 (1992).						
pt	M. Moisan et al., "Radio frequency or microwave plasma reactors? Factors determining the optimum frequency of operation," J. Vac. Sci. Technol. B9, p. 9 (1991).						
pt	H. Ohtake et al., "Charge-free etching process using positive and negative ions in pulse-time modulated electron cyclotron resonance plasma with low frequency bias," Appl. Phys. Lett. 68, P.2416 (1996).						
EXAMINER P. Hassanzadeh			DATE CONSIDERED 5-25-03				

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U.S. PATENT DOCUMENTS							
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE	
pl	5,153,442	10/06/1992	Bovino et al.	250	551	01/03/1991	
pl	5,112,435	05/12/1992	Wang et al.	156	643	11/29/1989	
pl	5,108,542	04/28/1992	Lin	156	643	08/23/1990	
pl	5,007,982	04/16/1991	Tsou	156	643	07/11/1988	
pl	4,994,715	02/19/1991	Asmus et al.	315	111.71	07/21/1988	
pl	4,933,300	06/12/1990	Koinuma et al.	437	110	02/12/1988	
pl	4,985,112	01/15/1991	Egitto et al.	156	643	02/09/1987	
pl	4,970,435	11/13/1990	Tanaka et al.	315	111.21	12/08/1988	
pl	4,935,661	06/19/1990	Heinecke et al.	313	231.31	06/26/1986	
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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
pl	L.J. Overzet et al., "Enhancement of the negative ion flux to surfaces from radio-frequency processing discharges," J. Appl. Phys. 66, p. 1622 (1989).						
pl	L.J. Overzet, "Model for charge movement after the radio frequency excitation is extinguished," J. Vac. Sci. Technol. A11, p. 1114 (1993).						
pl	L.J. Overzet et al., "Modeling and measurements of the negative ion flux from amplitude modulated rf discharges," J. Appl. Phys. 72, p. 5579 (1992).						
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U.S. PATENT DOCUMENTS							
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE	
ph	4,918,031	04/17/1990	Flamm et al.	437	225	12/28/1988	
ph	4,897,365	01/30/1990	Baldi et al.	437	69	11/23/1987	
ph	4,891,118	01/02/1990	Ooiwa et al.	204	298	11/23/1988	
ph	4,863,549	09/05/1989	Grünwald	156	345	07/01/1988	
ph	4,857,140	08/15/1989	Loewenstein	156	643	03/31/1988	
ph	4,836,887	06/06/1989	Daubenspeck et al.	156	643	11/23/1987	
ph	4,836,886	06/06/1989	Daubenspeck	156	643	11/23/1987	
ph	4,824,690	04/25/1989	Heinecke et al.	427	38	11/03/1987	
ph	4,807,016	02/21/1989	Douglas	357	67	11/20/1987	
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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
ph	L.J. Overzet et al., "Negative and positive ions from radio frequency plasmas in boron trichloride,"						
	Appl. Phys. Lett. 59, p. 161 (1991).						
ph	L.J. Overzet et al., "Time-resolved power and impedance measurements of pulsed radio frequency discharges," Plasma Sources Sci. Technol. 4, p. 432 (1995).						
ph	S. Samukawa, "Pulse-time-modulated electron cyclotron resonance plasma etching for highly selective, highly anisotropic, and notch-free polycrystalline silicon patterning," Appl. Phys. Lett. 64, p. 3398 (1994).						
EXAMINER <i>P. Hassanzadeh</i>			DATE CONSIDERED <i>5-25-03</i>				

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U.S. PATENT DOCUMENTS							
EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE	
pt	4,793,897	12/27/1988	Dunfield et al.	156	643	03/20/1987	
pt	4,749,589	06/07/1988	Heinecke et al.	427	39	12/10/1985	
pt	4,734,157	03/29/1988	Carbaugh et al.	156	643	03/18/1987	
pt	4,717,447	01/05/1988	Dieleman et al.	156	643	10/31/1983	
pt	4,693,805	09/15/1987	Quazi	204	192.22	02/14/1986	
pt	4,654,114	03/31/1987	Kadomura	156	643	12/16/1985	
pt	4,585,516	04/29/1986	Corn et al.	156	643	03/04/1985	
pt	4,568,563	02/04/1986	Jackson et al.	427	40	06/21/1985	
pt	4,263,088	04/21/1981	Gorin	156	626	06/25/1979	
FOREIGN PATENT DOCUMENTS							
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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
pt	S. Samukawa, "Pulse time-modulated electron cyclotron resonance plasma etching with low radio-frequency substrate bias," Appl. Phys. Lett. 68, p. 316 (1996).						
pt	S. Samukawa et al., "Time-modulated electron cyclotron resonance plasma discharge for controlling generation of reactive species," Appl. Phys. Lett. 63, p. 2044 (1993).						
pt	S. Samukawa et al., "Pulse-time modulated electron cyclotron resonance plasma etching for highly selective, highly anisotropic, and notch-free polycrystalline silicon patterning," J. Vac. Sci. Technol. B12, p. 3300 (1994).						
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EXAMINER'S INITIALS	PATENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE	
pk	4,180,432	12/25/1979	Clark	156	643	12/19/1977	
pk	4,075,583	02/21/1978	Kershaw	333	73 R	05/24/1976	
pk	3,940,506	02/24/1976	Heinecke	427	38	05/03/1974	
pk	4,568,410	02/04/1986	Thornquist	156	643	12/20/1984	
pk	4,412,119	10/25/1983	Komatsu et al.	219	121 PF	05/05/1981	
pk	4,401,507	08/30/1983	Engle	156	643	07/14/1982	
pk	4,283,249	08/11/1981	Ephrath	156	643	08/17/1979	
pk	5,983,828	11/1999	Savas	118	7231		
pk	4,500,563	02/19/1985	Ellenberger et al.	427/38	427/39		
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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)							
pk	T. Shibayama et al., "Silicon etching by alternating irradiations of negative and positive ions," Plasma Sources Sci. Technol. 5, p. 254 (1996).						
	B.A. Smith et al., "Time-resolved energy distribution of F ⁻ from pulsed radio frequency discharges," J. Appl. Phys. Lett. 78, p. 5195 (1995).						
pk	H. Sugai et al., "Diagnostics and control of radicals in an inductively coupled etching reactor," J. Vac. Sci. Technol. A13, p. 887 (1995).						
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pt	5,556,501	09/17/1996	Collins et al.	156/345	204/298.34	
pt	5,514,603	05/07/1996	Sato	437	16	05/06/1994
pt	5,928,528	07/27/1999	Kubota et al.	216	67	09/02/1997
pt	6,231,777	05/15/2001	Kofuji et al.	216	71	10/26/1995
pt	6,395,641	05/28/2002	Savas	438	714	05/16/2001
pt	6,253,704	07/03/2001	Savas	188	723 I	09/17/1999
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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)						
pt	J.T. Verdeyen et al., "Modulated discharges: effect on plasma parameters and deposition," J. Vac. Sci. Technol. A8, p. 1851 (1990).					
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